Opinion Piece

Challenges for Nature Conservation by Harry F. Recher and challenges to Recher's opinions

EDITOR'S NOTE

As editors, we enjoy receiving new papers, ideas and suggestions. Harry Recher sent an email: "Forwarded you my NCC paper. Would appreciate reaction." My reply, after consultation with, and support from, the editorial committee and Brad Law, co-editor of *Australian Zoologist,* was: "It is excellent. Do you want to publish it in the *Australian Zoologist*? If yes, would you like it distributed for comment and your reply? Recher replied: "Would love to publish it in *Australian Zoologist.* It will cause a fuss and some open debate on these issues would be good. Rob Pallin tells me that the meeting was divided (deeply) between those who want the paper buried "in the leaf litter" and those who want it shouted from the roof tops. The NSW environment movement is pretty divided on a range of issues and I received both strong (if whispered) commendation and strong condemnation (loudly)."

Recher added that it does need comment and reply and an umbrella heading. Recher's piece was sent out to a number of interested parties with the following letter, framed slightly differently to different locations: "Dear …, Harry Recher has again publicly challenged the conservation orthodoxy, this time via his guest speaker address to the NSW NCC AGM on 28 October 2001 (attached is a slightly modified version suitable for AZ). His priorities for nature conservation and, in particular, his view that wilderness is an impediment to conserving biodiversity, generated strong reactions. It is a debate that has many ramifications and is worth putting into print. It will be an "Opinion piece" in the *Australian Zoologist*, and the plan is to seek a range of comments to publish as a response. Recher will get a right of reply. Are you willing to write a paragraph (or much more if you wish) giving a comment?"

What appears below is Recher's paper, which was sent out in early December 2001, a set of responses received from late December 2001 to mid January 2002, and Recher's reply in late January 2002. The heading used by each respondent has been retained, as has their layout, with each person identifying themselves in a different way. There was no editorial standardization of either the format of the response, its length or content. The matter is not closed. Further responses, or any other opinion pieces, are welcome. Just email an editor.

Daniel Lunney (editor)

Challenges for Nature Conservation

Harry F. Recher

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When this paper was proposed as a talk to the Annual Meeting of the Nature Conservation Council of New South Wales, the title I was given was 'Future Challenges for Nature Conservation'.[1] However, I decided 'Challenges for Nature Conservation' was a more appropriate title. This is because the challenges are urgent and need to be taken up now, not at some time in the distant future. Either the environmental movement in Australia reconsiders its priorities and actions, and moves in new directions, or it will continue to be viewed as politically irrelevant by Australia's politicians.

In support of that statement, we need only consider that none of Australia's political parties have an environmental agenda that addresses either the underlying causes of Australia's environmental degradation or offers long-term solutions to on-going and intensifying environmental degradation. The policies that are enunciated lack a sound scientific framework and have no ethical underpinning which would enable them to succeed.[2]

There are two primary reasons for this. The first is that few, if any, politicians in Australia have the knowledge or experience which would enable them to understand the scope of the environmental crisis which confronts Australia in the coming century. The second is that, despite the continued expressions of concern in public opinion polls, the environment does not translate to votes in elections. People, and therefore politicians, are more concerned about their economic well-being and personal health than they are about the environment in which they live. It does not help that we are mainly an urban people with little contact with Australia's environment or its biota.

Regardless of what the polls say about the environment, a real commitment to sound environmental management does not exist within the larger population and politicians know this.[3] Changing this is one of the greatest challenges facing the conservation movement in the coming decade. Nature conservationists themselves must also become better informed on the scientific basis of nature conservation and the consequences of their conservation priorities and policies.

In his review of Bjorn Lomborg's book, *The Skeptical Environmentalist*, James Woodford, Sydney Morning Herald environment writer, asked whether the Australian environment movement had its priorities right (Sydney Morning Herald, 29-30 September 2001, Spectrum pp. 4-5). According to Woodford, "*It is now becoming clear to many environmentalists and scientists that the fight for the forests and iconic areas like Kakadu should not be the sole focus of* [environmental] *campaigning.*" (Woodford, p. 4).

As an environmental journalist, Woodford is sure to be aware of the breadth of environmental issues engaged by conservationists. Woodford's point is that, despite the breadth of concern, only a few issues, such as forests, dominate the conservation agenda and capture the headlines. In the process, two things result. The first is that issues with greater ecological and environmental importance are given less attention. The second is that politicians can easily capture the movement and satisfy its demands. Thus, they can present a green image regardless of how little is actually achieved for nature conservation.

Woodford identifies three issues requiring urgent attention: 1. an economic system that destroys the environment and provides few incentives to encourage people to behave differently; 2. the ecologically unsustainable management of agricultural lands; and, 3. the need to control "*feral pests, both plant and animal*" (Woodford, p. 5). According to Woodford, a great deal of energy has gone into the glamorous campaigns of fighting for the forests and stopping uranium mining, "*while some of the important* [issues], *such as land-clearing and salinity, have been almost completely ignored until the past few years.*" (Woodford, p. 5).

While I do not entirely agree with Woodford's national priorities, I do agree with his assessment of the environment movement and its narrow agenda. But I go further. There are campaigns driven by the environmental movement which not only achieve little for nature conservation, but have a negative impact on the conservation of Australia's biota.

I reached this conclusion, because my primary concern is the protection of biodiversity. This is my primary concern for no other reason than my belief that we have a moral responsibility to share Planet Earth and the Australian continent, and all their resources, with all other organisms - whether we like them or not. My ethic informs me that there is no such thing as an unused resource - there is no vast empty continent waiting for human occupation to fulfil its destiny. There may be resources not being used by people, but none that are not being used by some other organism. For humans to develop and use those resources, other species must be diminished in proportion and we have no more right to do this than to occupy our neighbour's home and steal their food.

Biological conservation is also a fundamental condition for achieving an ecologically sustainable human ecosystem and in a recent lecture in Perth, I presented a view that 'development' was incompatible with biodiversity conservation.[4] In other words, 'ecologically sustainable development' is an oxymoron. Development of the human enterprise means more people, more houses, more farms - and less of the natural world. As biological diversity is lost, the quality of life is diminished and so is our freedom to choose. Ultimately, human ecosystems become unsustainable as the essential services provided by the natural world and other species are degraded and lost.

Although the environmental movement professes concern for nature conservation, many of its actions contribute little to biodiversity conservation when viewed either holistically or from a long-term perspective. Often, the actions of the environmental movement have adverse long-term effects for nature conservation. Inaction on other issues has had the same effects.

Like Woodford , I am of the view that the environmental movement must review its priorities. It must also make a better effort to understand the consequences of its actions. Like Woodford, I do not believe forests or uranium mining are the most significant issues facing nature conservation in Australia in the 21st Century.

Considerable gains have already been made in forest conservation and management and, relative to the losses of biodiversity from land clearing and overgrazing, logging native forests pales in significance. In a similar vein, objections to mining uranium at Kakadu need to be put in the context of both global warming and the invasion of Kakadu by Cane Toads, either of which pose greater threats to the region's flora and fauna than mining or the use of uranium for power generation.[5]

Environmentalists must ask whether the push for more forest reserves is to ensure the conservation of the forest biota or is concern for forests primarily anthropomorphic. For who or what are we saving the forests from logging? The dominant conservation outcome is to allocate more forest land to conservation reserves while leaving the matrix to increasingly intensive exploitation. While there are sound arguments for the protection of old growth forest, this is primarily because little remains and old growth may have organisms and ecosystems which cannot survive logging. But we do not know, and if there are old growth dependent organisms in Australian forests, they are not the birds and mammals which attract the greatest concern from environmentalists.

If, as Woodford and I suggest, forests are not the most pressing issue for nature conservation in Australia, what are the priorities? For Woodford, it is the need to change the economic system, to manage rural lands better, and to control pests - although I am not sure if he includes native species, many of which now cause serious ecological damage. All Woodford's priorities are important and deserve attention, but mine are different.

Nature conservation is the conservation of biodiversity. This is not the same as the conservation of naturalness, although the two are often linked and dependent upon one another.

My highest priority for biodiversity conservation, and the greatest challenge for the environment movement, is to reduce the population of Australia without repression or economic disruption. Without a population policy and population reduction, Woodford's need to change an economic system which systematically destroys the very foundations of its existence can never be realised. Numbers of people and their use of resources cannot be separated, but before the economic system can be made sustainable and environmentally friendly, the population must be stabilised, then reduced.

We have already exceeded the carrying capacity of the Australian continent. For too long the environment movement has ignored the consequences of population growth and confused the need to limit numbers on ecological grounds with bigotry and racial and cultural intolerance.

The next greatest challenge for the environment movement is to end land clearing, including the clearing of lone trees in an otherwise empty paddock. Land clearing is the greatest immediate threat to Australia's biota, but the environment movement needs to make a greater effort to understand how the loss of native vegetation affects the biota.

Concern for land clearing is part of Woodford's priority for better management of rural lands, but an end to land clearing is only part of the challenge for better land management. The entire agricultural system, including pastoral lands, must be restructured. The restructure must be both economically and ecologically viable, while protecting the social fabric of rural communities. This is a considerable challenge for the environmental movement given the commitments already made by the Australian

Conservation Foundation to maintain the *status quo*; that is, to work within an agricultural system that has already failed all tests of ecological sustainability when there is a fundamental need to realign property boundaries on ecological criteria and to apply very different forms of land management.

There are many more challenges, but I will stop with a third to keep on par with Woodford.

I challenge the conservation movement to realistically assess its position on national parks and wilderness. Even excluding the call for more forest conservation reserves, environmentalists present conservation reserves and the protection of wilderness as the core of their policies for nature conservation. While I accept a system of conservation reserves as an important part of any program to protect continental biodiversity, past, present and future reserve systems fail to meet even modest scientific standards for reserve design and the conservation of Australia's flora and fauna. The national parks system is largely driven by recreationists and little consideration is given to the requirements of other species.

On this continent, I am not aware of any organism which requires wilderness for its survival. Wilderness in Australia is a recreation concept and the emphasis on reserving wilderness areas has had significant adverse effects on biodiversity conservation. These adverse effects have arisen in two ways.

The first is one I mentioned earlier. By placing wilderness at the pinnacle of the conservation agenda, environmentalists have enabled successive governments in New South Wales, for example, to reallocate land use within the existing public lands and conservation reserve system without adding to the conservation estate. That is, State Forests, National Parks and Nature Reserves have been reassigned as wilderness. To a large extent this has been done without selecting reserves for their importance for flora or fauna, and without addressing the management problems of the surrounding matrix or of the rural environment. The dedication of wilderness, regardless of its lack of any additional benefit to biodiversity conservation that might have been gained by, say, protecting old growth forest as a nature reserve, has enabled state governments to present a 'green' image without requiring them to address the more important conservation issues of land clearing, poor management of agricultural lands, coastal development, and degradation of inland waters, coastal rivers and estuaries. Some environmentalists might be aware of the contradiction, but the majority of voters are not and are lulled into believing we have environmentally sensitive governments in Australia simply because they declare a few national parks and some wilderness areas.

A wilderness designation over existing reserves can have negative effects, as is illustrated by the declaration of the Nadgee Nature Reserve in southeastern New South Wales as wilderness. Not only was there no net addition to the reserve, nor any change in access policies for recreationists or improvement in Nadgee's natural values, the wilderness designation has opened the reserve to uncontrolled access by sea with greatly increased fire risks as a consequence. The three long-term ecological studies established in Nadgee during the 1960s, representing three of the longest running ecological programs in the world and of inestimable value for providing the data required for the management of natural areas and threatened fauna throughout Australia, have been disrupted and will be shortly terminated with no prospect of essential follow-up studies as conceived during the original design of the research. Other long-term ecological studies at Nadgee and in other areas now designated as wilderness have been similarly disrupted. The consequences of the termination of these programs just as they are starting to yield the long-term ecological data that has never existed for Australian ecosystems was never considered when deciding on a wilderness designation for Nadgee.

Nadgee is not a wilderness, but it is an important reserve for nature conservation. I now expect Nadgee to experience greatly increased fire frequency, a proliferation of fox numbers, and a rapid decline in its faunal diversity. The wilderness designation has already had a significant adverse impact on the intertidal biota which now appears to be exploited without control.

If Nadgee is to remain a wilderness, and I hope it does not, then the reserve must be closed to all human access from mid-spring to mid-autumn when the fire hazard is the greatest and beach birds are nesting. Closing the reserve to walkers during the nesting season is necessary as it is not possible to walk the length of the reserve without using the beach at Nadgee (Salt) Lake as a track and it is this beach which has the highest concentrations of loafing seabirds and nesting waders and terns. Walkers disturb these birds and expose nests and young to predation from the ever present gulls and ravens. Nadgee's plants and animals are more important than the recreation of a few bushwalkers and Victorian surfers.

There is a final problem with Australia's reserve system that challenges the long-term objectives of nature conservation. Much has already been said about the lack of representation within the system, and about the generally small size of reserves and high boundary to area ratios. Much of Australia's biodiversity is missed from the system and the majority of reserves will progressively lose species. This 'extinction debt' in the reserve system is large and probably includes 40 - 60 % of all bird species which require alternative areas for migration and/or nomadic movements. Initially the losses will be greatest in small reserves and in reserves within the arid and semi-arid zones, but I see no reason why the losses will not extend in time to the coastal and forest reserve system. This will be more likely as the matrix within which reserves are embedded becomes increasingly modified, but global warming will be a significant factor.

Correcting the problems of Australia's reserve system will not be achieved simply by adding more reserves. Assuming that the international target of 10 % of Australia's land area is set aside for nature conservation, there are two difficulties. The first is that 10 % of the land area will only protect 50 % (more or less) of species, but this assumes a high level of ecological integrity within each reserve and relatively large reserves. Probably, 10 % of the continental land area will conserve much less than half the biota, especially as a large proportion of this area is already committed and unrepresentative, and no scope is allowed for biota to disperse.

The second problem is the prevailing attitude that reserve boundaries are fixed and reserves are inviolate. This further compromises the long-term utility of the system for meeting nature conservation goals as climate change will inevitably and insidiously affect the viability of individual reserves for the species originally contained within their boundaries. Unless the matrix is managed sympathetically, which by and large, it is not, most of the biota will be unable to move between reserves as dictated by climate change.

The conservation movement must think seriously about the kinds of reserves required for long-term nature conservation and whether the concept of reserves fixed in space is appropriate. As part of this evaluation, conservationists would do well to decide whether our national parks are just for people and their recreation, or whether there might not be a requirement for a more ethical system where the emphasis is on sharing with other species and less on pandering to the recreation interests of minorities.

1. At the invitation of the Nature Conservation Council (NSW), I presented an earlier version of this paper to the Council's Annual Meeting on October 23, 2001 at the National Herbarium, Sydney. That version focussed on New South Wales and the environmental movement in that State. The paper published here has been modified to suit a wider audience, but in reality, few changes were required.
2. The disinterest of Australia's politicians in the environment and the narrowness of the environmental debate, when the environment was even mentioned, was evident throughout the campaign for the National Election on November 10, 2001.
3. This conclusion was confirmed by the most recent report of the Australian Bureau of Statistics which found that concern for the environment among Australians had fallen 13 % to 62 % since 1992 (The West Australian, 23 November 2001, p. 9). Perhaps, the most disturbing finding of the ABS was that the biggest fall in environmental concern was among the 18 to 24 year age group.
4. Unpublished paper, 'Development in the face of biodiversity', presented to the Environmental Consultants Association (WA) Annual Seminar, 7 September 2001 Managing Biodiversity in Western Australia. Copies available from the author.
5. Even in a worst case scenario in which a terrorist organization acquires and uses a nuclear device to destroy a city, the act of terror is less significant than the reason people might act in this way. There may be many reasons for terrorism, but the huge inequality of wealth among the world's people creates a fertile environment in which fear, hatred, frustration and hopelessness flourish. It is from these that terrorism arises. Which then is the greater need, stopping uranium mining or creating a world in which all people receive a fair share of resources and frustration and hopelessness are replaced by cooperation and hope?

The responses

1. Challenges for Nature Conservation

The above was the title of Professor Harry Recher's scathing attack on the environment movement, which he sees as out of touch and politically irrelevant. It is correct that the environment movement has not turned the tide on environmental degradation, but Prof Recher overlooks how the environment movement has matured over the last decades.

The NSW environment movement presents detailed budget submissions that address a range of issues and influences the priorities and agendas of environmental legislation as it progresses through the Parliament. The larger local groups, such as the Blue Mountains Conservation Society and North Coast Environment Council perform equivalent strategic tasks on a regional scale through local government. These functions work in conjunction with the largely activist movement of around 300 environment groups in NSW.

Prof. Recher may be correct in his observation that people are mostly concerned about what affects them. However, this lumping together of people into one homogenous self-centred group is naive. The Colong Foundation for Wilderness put considerable effort into promoting the damage being caused to the Sydney metropolitan water supply catchment by underground coal mining. This is a classic issue of environmental sustainability (water supply for 4 million people) versus economic rationalism (coal for export and steel production). Using Recher's analysis of people's priorities such an issue could be expected to generate considerable public attention. So why didn't it? At least part of the answer lies in how people gain information on such issues. The mainstream media was not interested in creeks in catchment areas that did not flow, even after rain. Complex environmental issues are not welcomed by the majority of the media, which has traditionally preferred to represent such issues as tussles between personalities.

Prof Harry Recher, Dr Michael Archer and environmental journalist James Woodford are well aware that personalities are needed to attract media attention to environmental issues. It is easy to attack what they say, but this is a mistake. Issues need personalities to project the debate in the media.

Prof. Recher's claim that by the environment movement focussing on a few issues such as forests "politicians can easily capture the movement and satisfy its demands" is ludicrous. The environment movement has the resources to focus on a few key issues and get results. When a political party delivers conservation on forest, it is appropriate that these efforts are properly recognised. This does not represent a "capture" of the movement. Further, with accompanying increase in public awareness, this is a way of bringing other issues into the political and wider community agenda.

Many politicians are acutely aware that major changes are needed to protect the natural environment, including reduction in salinity and land clearing and will actually do whatever they consider is politically viable to stop the retreat of nature. Disagreements on mining, land clearing and water reform are really debates on what is politically possible while addressing the differing aspirations of "stakeholders". This is exacerbated by the constraints imposed by party politics. These constraints are not exclusive to the environment movement. Witness the pre election debates on public education, health and other issues of social equity.

An example of the complexity and difficulty of environmental issues is the campaign to stop the destruction of the water supply catchments by better regulating longwall coal mining. As soon as the necessary protection is proposed for the catchment, the multinational mining companies involved threaten the closure of Wollongong's steel industry as a consequence of rising coal prices. Similarly, a hundred million dollars to pay farmers to stop land clearing would achieve a bipartisan solution to that problem.

The environment movement has maximised its effect by focussing on what it can achieve, and to a large extent, has achieved many of its objectives. The issue of the Jabiluka uranium mine is about whether national parks mean anything. The mine is also about other ideals, like preserving the planet and preventing the proliferation of what can be a very dangerous heavy metal (U_{235}) and its very hazardous radionuclide by-products, like plutonium. In that context Jabiluka is a very important struggle (although what Prof. Recher says about Cane Toads and Kakadu is right, but short of forming a futile Conga line and catching the toads as they hop north there's little environmental activists can do).

Professor Recher's analysis of the methodology employed by the movement for forest reserve design is ill informed. To blame poor reserve design on pandering to the interests of recreationists is again naïve. That the reserve system may fail to meet "even modest standards of reserve design and…conservation" is more due to the constraints imposed by the conflicting interests of other "stakeholders" within a highly politicised decision making process. In a room full of such decision makers only one or two would prioritise nature conservation. Further, a concentration on forest conservation rather than land clearing during the last decade was due to the realistic priority of protecting public lands first.

Addressing the issue of global warming, Prof Recher's arguments for incorporating its impacts in the reserve design process were recognised. It is a pity that more scientists of his calibre and position did not make a stand on the issue when the compromises were being made. As for the suggestion of flexible reserve boundaries to accommodate climatic change, such a plan could be incorporated into the biodiversity stewardship payments scheme proposed by environment groups to expand the off-park conservation reserve system in NSW. This would be an extension of the existing reserve system through conservation leases, rather than changing the boundaries of existing reserves. The latter proposal invites the destruction of the reserve estate for the economic opportunities they contain, rather than providing for future conservation needs!

My greatest objection to Prof. Recher's directions paper is his frontal attack on national parks and wilderness. If "the national parks system is largely driven by recreationists and little consideration is given to the requirements of other species" as Prof. Recher says, then what is wrong with wilderness? Wilderness is land managed for nature conservation. Many, if not all, wilderness areas are areas of high natural biodiversity and compared to disturbed environments are also reasonably free of pest species. Prof. Recher would be well aware of island biogeography concepts and wilderness areas are large islands in a sea of modified lands full of exotic species. His claim that no organism requires wilderness is absurd. How much wildlife can survive in disturbed environments where exotic animals and plants have the advantage? Reserving lands as wilderness is exactly what is needed because in these areas the National Parks and Wildlife Service will manage for nature conservation ahead of the all-demanding, hedonistic, budget hungry, recreation interests.

Prof Recher is dead wrong on Nadgee wilderness, where vehicle access has been reduced (and 4WDs on beaches squash more roosting birds than walkers will ever do). The nature reserve was considerably expanded into state forest areas due to the wilderness dedication. Access to the reserve for non-destructive scientific studies has not been curtailed but inappropriate activities like placing radionuclides into pristine food chains and burning off bits of the reserve to see what happens are less likely to be approved than in the 1970s, both in this reserve and elsewhere in the parks estate. If he can justify the importance of his research, and any effects on the environment, then the NPWS would permit it to continue. Wilderness would have nothing to do with it. If nature reserves are the pinnacle of the reserve system, then the requirements on scientific research in them should be stringent.

His complaints about access by walkers in the nature reserve are addressed by the long-standing permit system for access to nature reserves. If there are problems posed by too many walkers on the beaches (or just having any park visitors there at a particular time of the year), he should work with us to seek a seasonal closure for walkers and extend the nature reserve to the low water mark. Enforcement of nature reserve regulations to people who bring in their boats and dogs onto the estuaries and beaches requires that the nature reserve be extended. Support for greater penalties and increased resources to NPWS would enforce the management of the nature reserve. Support for a marine extension (marine park) to protect the marine resources adjacent to the reserve would also assist. The wilderness declaration helps justify, not hamper, these initiatives for nature conservation.

A central tenet of the National Forest Policy was wilderness protection. Since this initiative, no area of forest would have become nature reserve rather than national park if wilderness was removed from the equation. Indeed, if wilderness was excluded from the forest debate, these old growth forest areas would have remained state forests and been logged. The Carr Government's commitment to protect wilderness has helped protect broad areas of native forest and these are essential if wildlife is to survive greenhouse and other pressures, such as wildfire.

Environmentalists have enough on their hands dealing with destructive pressures outside parks, and with new moves to exploit parks. We need more wilderness advocates and stronger park stewardship. When the push is made late next year for a raft of reserve proposals in the Central West of NSW, I hope Prof. Recher will co-ordinate dozens of supporting letters from sympathetic scientists in support of these moves.

Keith Muir
Director
Colong Foundation for Wilderness

2. Response by Peter Myerscough

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Having read Harry's argument, I feel that it should stand initially without the hoo-ha of replies and answers to those replies. Its merit is that it should make people think about what they are doing and the assumptions on which they are operating in the name of nature conservation. In conservation, there is always the need to identify issues of the highest current priority, and this requires a proper basis for that and continuous re-assessment of priorities, though not to the extent of never completing anything that is undertaken, In short, it is a difficult game. I think that Harry's priorities of reduction of population, changing agricultural practice, especially with respect to land clearing and salination, and operating more appropriate criteria for reserve selection are fine and, as he more than hints, need adopting and promoting through public policy. Tactics in achieving these things are not obvious, to me at least, and there are many worthwhile lesser things in conservation of biodiversity that can be achieved quietly along the way. Indeed, I would expect that the only means of involving a significant proportion of people in the farming and grazing communities in adopting sound measures for conserving biodiversity on lands they control is by very patient work with individuals over the long term. Bashing them around with a big stick of policy is probably going to be counterproductive.

In short, my feeling is to publish Harry's paper as it stands, and let people mull over it for a while before inviting replies.

[Peter sent the above in response, and despite his last thought, he did agree to allow it to be published, partially because he recognised that the time between publishing the speech and then the replies would be too long. We are grateful for his agreement to publish. The points made are important. –ed.]

3. Comments on Recher Paper

Dr Recher highlights the fundamental challenge for today's society. Too many people placing ever greater pressure on our natural world at an increasingly rapid rate - and no accepted way of slowing down, let alone stopping or even winding back.

The sad truth is that overall destruction of our life support systems and wonderfully intricate natural heritage continue to decline at an increasing rate. This requires a fundamental shift away from short-term hip pocket nerve decision making. A re-shaping of our political, financial and social institutions is needed to provide a strong, long term framework based on the conservation ethic. This is a hard call. What Dr Recher fails to acknowledge is the work of many people from many walks of life, scientists included, who have helped, mostly in an underfunded volunteer capacity, to get us this far in understanding the need for conservation at all levels. It is not the messager that should carry the blame!

I look forward now to constructive comment, from him and others, on ways to address this challenge. From my experience I believe there are many - non-government environment activists included - eager for more champions to join the fray before it is too late.

Anne Reeves,
OAM Past President,
National Parks Australia Council.

4a. Challenges for nature conservation: who isn't playing their part - environmentalists or scientists?

Shelley Burgin,

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Author's background

A/Professor Shelley Burgin has spent many years working for the environment movement, including employment as a Research Officer for the Total Environment Centre in the early 1980s. She continued her close association with the Centre for some years as a member of their Management Committee. For several years in the 1990s she was the Royal Zoological Society of New South Wales' representative on the Council of the Nature Conservation Council. Since completion of her PhD in 1989 she has been an environmental scientist at the University of Western Sydney and has maintained an active interest in the environment, most significantly as an environmental representative on a wide range of statutory bodies and other committees concerned with environmental issues. In 2001 she became a Fellow of the Royal Zoological Society of New South Wales, in part, for her contribution to conservation.

Our outlook on life is influenced heavily by the baggage we carry: the history of our culture, our upbringing, education and other day-to-day influences. The environment movement in New South Wales, which lays claim to having the oldest environment office in Australia, is no different. It largely grew out of the efforts of Myles Dunphy and his bush-walking friends. They saw their favourite wilderness bush-walking haunts under threat and sought to ensure that these wilderness areas were incorporated into a reserve system to ensure the long-term conservation of their favoured areas.

Their passion and influence has remained. People, such as Alex Colley and Myles, followed by his son, Milo, have effectively charted the course of nature conservation in Australia and a major passion has been the conservation of wilderness areas, the areas they knew, walked in and loved.

Over the years many others have gravitated to the environment movement that these pioneers had effectively created, often initially because of threats to their local environment. After initial contact, many have stayed and been influenced by the rhetoric and charisma of the leaders within the field. In turn these acolytes have, at times, become as strong and committed advocates for these environmental interests as their mentors.

We should not condemn the environment movement for being heavily influenced by such history. They are playing their part in the conservation of the environment and playing it very effectively. The more recent generations of environmentalists have learnt their lessons well and have played an important role within their sphere of interest.

Not so those with the theoretical and applied knowledge base to provide more objective input into conservation. Where is the ‘objective’ input of scientists? If we were playing our role, would the money from the sale of Telstra be squandered so frequently on ecologically unsound ‘works on the ground’? Would the New South Wales vegetation and water reforms agendas be so lacking in scientific input? Where were the scientists when the New South Wales government ran a salinity summit to determine future directions for overcoming this ‘new threat’ to the environment, a threat that science has been concerned about for most of the last century? Where in the scientific world are the strong environmental interest groups with iconic leaders? Harry Recher is one of the very few scientists prepared to step outside of his comfort zone and speak out for what he sees as correct, but even then he does not confront his peers.

There is no doubt that the whole approach to conservation (like Harry I see this as biodiversity conservation) is ‘off the rails’. The environmentalists and those who make their living from the environment (eg., farmers, developers, miners) are frequently at loggerheads, polarised at opposite ends of the spectrum with no common ground. In turn, politicians tend to respond to the loudest noise, those from the most marginal seats or whatever is going to optimise their chances of remaining in power. In their defence, they frequently don’t have any better basis from which to make decisions because the scientists are not contributing to the debate, not contributing to their knowledge.

We, like Nero, are fiddling while Rome burns. As Harry pointed out in his article, the challenges for nature conservation are here and now, not at some distant time. This country is over-populated, land degradation is widespread and expanding land clearing continues, salinity is expanding, biodiversity is declining. There are better techniques than we are currently using to maximise biodiversity conservation but there needs to be dialogue, targeted research, review and reflection, underpinned by good theoretical science. Until those trained to understand the issues are mobilised and take their place as a serious voice in the conservation of our ecosystems, we will continue to see resources squandered, the environment degraded and biodiversity lost, maybe even before many understand the ecological meaning of the word. As Harry points out, a first step is to take a serious look at this oxymoron called ‘sustainable development’ and accept that, above all, we need to recognise that this unique and climatically unpredictable land has already exceeded its human carrying capacity.

There is a need for intervention, a change of direction. I don’t see that we should expect the environmentalists to change their *modus operandi*, it is the scientists who should be shouldering their part of the burden and supporting the efforts of those who have the passion, and not condemning the environmentalists for their direction.

4b. Hats off to Harry Recher

(Shelley Burgin adds to her first response – ed.)

There is not a clear-cut distinction between scientists and the conservation movement because some scientists wear both conservation and scientific 'hats'. However that is not the way Australian governments see it. Governments are much more likely to seek our input as conservationists than as scientists. There is no doubt that when it comes to having the ear of government, often the only way of getting there is through association with the environment movement, not as scientists.

I do not remember a single instance when the primary reason for me being asked to sit on a government statutory authority or other government committee was as a scientist, but I have sat on a huge number as an environmental representative. The obvious response to this is that maybe I am a much better environmental representative than scientist. This may be the case, but that is for others to judge. However, on virtually all of those committees there was not a position for a scientist. Generally, Australian governments (at all levels) have totally ignored the scientists and, as a consequence, our voices are generally only heard when we are representing the environment movement (hence my artificial separation of the two).

I am convinced that this is largely because the scientists have generally been very weak at standing as a united group/s. Many don't even realise (or don't care) that we have been side-lined. The environment is the big loser.

My comment that Harry Recher had not confronted his peers is, upon reflection, maybe a little harsh. However, in the context of the paper presented to the NCC, I think that he may have been soft on the scientists by comparison (that was the context within which I made my comments). His presentation to NCC was pretty powerful and I congratulate him on having the nerve to say the things that he did in that forum. Few others (if any) would have been prepared to do so. Maybe I haven't been listening (like many of my peers) but I have not heard Harry come down so strongly against the scientists as a group for not taking their part in the debate.

I agree that *A Natural Legacy* (Recher *et al.* 1986) was an excellent book and it certainly has played a part in environmental education. However, it would be extremely useful for it to be updated and re-released. *Pacific Conservation Biology* is also an excellent forum and I think the *Australian Zoologist* is also. However, these publications and others of the same ilk are not what directly influence the day-to-day decision making of our governments. If it were the case, governments would be providing places on their statutory bodies for scientists, supplying universities with money to provide advice to them and there would have been more provision in NHT for research and appropriate monitoring.

Am I off the rails along with the environment movement?

Shelley Burgin

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5. NPWS response from the Eden Region

The National Parks and Wildlife Service has been invited by the editorial committee of the *Australian Zoologist* to reply to Harry Recher's paper, 'Challenges for Nature Conservation'.

There is much in Professor Recher's paper with which the Service and indeed most nature conservation professionals would agree. In particular, his theme that the reserve system alone will not conserve biodiversity provides the critical challenge for the Service and other land managers.

While we do not intend to enter into debate over some of the broader issues in the paper, we are taking the opportunity to correct some specific issues raised by Professor Recher in relation to the Nadgee Wilderness. These are as follows:

1. *"The Nadgee Wilderness declaration resulted in no net addition to the reserve." page 115 para.6*

   In 1997, the upper Merrica catchment was added to the Reserve as part of the NSW Government wilderness decisions. The purpose of this addition was to ensure that the whole of the Merrica River catchment was included in the Nadgee wilderness. The area was formally part of Nadgee State Forest and in all probability would not have been added to the Reserve but for the wilderness process.

2. *"The Wilderness designation has opened the reserve to uncontrolled access by sea with greatly increased fire risks as a consequence." page 115 para. 6*

There has been no increased fire ignition within the Reserve since it became a Wilderness Area.

The wilderness designation has made no change to sea access in this remote area. Through the Plan of Management process we have contacted and discussed issues with users groups including sea kayakers. From the results of this and future discussions we anticipate that water craft users will have a greater awareness of their responsibilities.

"Long-term ecological studies have been disrupted as a result of the wilderness designation" page 115 para. 6

Existing long term ecological studies at Nadgee are identified as an essential management activity within the Draft Plan of Management. These studies can continue within the Wilderness Area. The only disruption to these studies is to control vehicle access along the identified trail network during wet conditions. This decision predates the wilderness decision and is simply good environmental practice.

3. *The Nadgee Wilderness declaration will lead to a greatly increased fire frequency, a proliferation of fox numbers and a rapid decline in its faunal diversity*. page 115 para. 7.

Prior to the Reserve becoming a fauna reserve the heaths were regularly burnt by graziers from the 1890s until the 1960s. The NPWS has in place a number of strategies to ensure the rapid location and response to remote fires. Strategies include the use of planes after lightning storms to locate any lightning strikes, the use of helicopters for rapid deployment of crews etc. This fire response plan has been endorsed by the Bega Valley Bush Fire Management Committee and the Wonboyn Fire Protection Committee. There is no reason to suggest that the designation of Nadgee as a Wilderness will lead to increased fire frequency. Our fire management responsibilities and practices do not change as a result of wilderness declarations.

Feral animal control has been undertaken in the northern end of Nadgee Nature Reserve and around Merrica Ranger Station and the boundary of the reserve. CSIRO Sustainable Ecosystems updates the Service on the status of feral animals in the southern part of Nadgee Nature Reserve through their project "The long term responses and interactions of ground-dwelling fauna to wildfire, changes in habitat structure and predation by feral animals". This study demonstrates that there has been very little change in the abundance of foxes over the last 10 years. At present we are not carrying out fox control in the wilderness area as this would compromise the CSIRO research program

The CSIRO study has been documenting changes in abundance of twenty-one fauna species and other mammal species. This study shows that there has been no loss of mammal species within the Reserve. There have been quite dramatic changes in abundance of different mammal species relating to vegetation structure changes. This has nothing to do with wilderness declaration, but rather time since fire. Wilderness declaration neither abrogates nor hinders our biodiversity management responsibilities. For instance, following any major wildfire the Service will quickly implement feral animal control programs in and adjacent to identified refuge areas.

4. *"..the reserve must be closed to all human access from mid-spring to mid-autumn when the fire hazard is the greatest and beach birds are nesting" Page 115 para. 8.*

There is no evidence to support the implication that bushwalkers are having an impact on nesting shorebirds. The Nadgee beaches are some of the least visited in temperate Australia, due in part to the very tight controls over numbers of walkers in the Reserve. A joint permit system operating between Nadgee Nature Reserve within NSW and Croajingolong National Park in Victoria limits the numbers of walkers within the Nadgee Wilderness area to a maximum of 20 at any one time. Further, information is provided to all walkers on how to refrain from disturbing shorebirds and nesting birds.

Nesting shorebirds are probably at more risk from the resident dingo population particularly around Nadgee Lake where they are seen regularly patrolling the beaches. Dingoes have been seen feeding on the swans which gather at Nadgee Lake between September to January to moult.

Further, unlike many other Australian beaches, disturbance of nesting sites by domestic dogs is simply not a problem. Tight controls on access ensures this.

In conclusion, the challenges in conserving Australia's biodiversity are many. Our management of Nadgee should be seen as part of the solution, rather than the problem.

Lyn Evans, Ranger NPWS Merimbula.

Tim Shephard
Regional Manager Far South Coast Region.

6. Response by David Paton

Dept of Environmental Biology,
Adelaide University, Adelaide SA 5005.

Recher provides a chilling but challenging prognosis for the conservation and management of the Australian environment. Chilling because he is right, challenging because we know what needs to be done but cannot take the first steps. Recher points to a need to stabilize and then reduce population size, to stop clearing land and to restructure the agricultural system, and that these changes need to be done without repression, economic hardship or social injustice. However, what is depressing is that there is no advice on how to do this, let alone quickly. There is no glimmer of hope in Recher's rhetoric.

I have no answers or advice but the following might stimulate some response. The changes needed are across the board – political, social, legal and economic. In all of these areas we need to consider the long-term consequences of the decisions that we make today.

Why is it so hard to have the long-term environmental consequences considered? The answer is simple – environmental time lags. For many of the things that we do now the environmental consequences are not immediate. This makes it extremely difficult, particularly for the general public to appreciate the link between 'cause and effect'. Similarly the impacts of an action in one area might be expressed in another area (e.g. downstream in a river). To a large extent our political system is out of temporal sync. Politicians are elected into office for 3-4 year terms, and the economic incentives for politicians to be re-elected are high. This causes a conflict of interest – they profit as individuals by making decisions that maximize short-term benefits to their constituents. Yet such decisions often have dire long-term environmental consequences. Perhaps decision-makers should be held responsible for their actions for life. If politicians were only elected into office for one term then would they make the same decisions? With single terms, politicians might act differently since their claim to fame would be judged by the legacy they leave behind and not by the size of their superannuation package. Since our political process will not change, the game plan for the conservation movement might be to get the environment out of government hands, to create a truly national Environment Trust. As a separate entity such a body could be an effective, independent and omnipotent watchdog, managed by people with sound environmental knowledge and experience, to be involved in setting the restrictions on developments and government policy.

What about Recher's concern about decreasing the size of the human population – how can we reduce population size? Or is there an alternative? Perhaps if we were willing to take a cut in our standard of living then the size of the population might not need to be reduced as much. What is standard of living? I am not sure – glossy magazines and advertising and hence society in general might view this as a measure of the material possessions that each of us own, and this can be easily equated with our pay packets. But this is a poor definition. Standard of living might be better defined as quality of life, which is surely a function of good health, an absence of stress and an opportunity to enjoy a wealth of human experiences. None of these need material possessions. Irrespective of our definition, we all need to reduce our per capita use of non-renewable resources. We will not only reduce the footprint we leave behind on the earth, but also perhaps lessen the requirement for outright population reduction.

Recher suggests that the maintenance of biodiversity is dependent on the matrix of habitats between reserves and that the agricultural system needs to be overhauled and changed to a less intensive and hence less damaging process. No arguments here but where should one start? First and foremost we should stop clearing native vegetation but this alone will not be enough since it does not address the absence of matrix habitats. But our understanding of the environmental time lag tells us that more species will continue to go locally and regionally extinct in many areas. We need to be revegetating areas urgently but we need to be doing it on a much larger scale than is being done at present. Retiring whole farms from agriculture and dedicating them to restoration of natural systems would be a fine start. I would not recommend the purchase of these farms outright, but instead provide the owners with a public servant's salary and a modest operating budget so that the property owner can remain in the district in order to maintain the social fabric and their sense of place in the community.

There are many places where we could also start to educate the community about the environment. Lets start with business. Most businesses judge their performance by their bottom line – the size of their profit. Why do we never hear about what these companies actually do? Perhaps in addition to a daily stock exchange report the conservation movement should develop an index that can reflect the state of the environment, and that index, like the Stock Exchange report, be stated in our daily news bulletins. The nightly reporting in the news of the carnage that we humans inflict on each other would pale into insignificance.

Media and advertising must also become responsible and environmentally good citizens. They should stop reporting environmental matters in a confrontational manner of conservation versus development and start looking seriously at the long-term consequences – impartially provide arguments both for and against and let the people decide. Advertising campaigns have as much responsibility to the environment as everyone else – its time to stop showing 4WD vehicles lairising over sand hills and down creek beds, places where they should not be in the first place. It is time for these industries to be proactive and to undo the inappropriate images that have already been planted in the minds of the public.

Finally our independent, national environment trust could be formed by industry where all businesses contribute a portion of their gross income (1%) or a portion of their profits (10%) into the environment trust. Those funds would be used for research into how the Australian people enhance their ever-diminishing natural assets.

7. The Editor

There is no doubt that sustainable ecosystems and biodiversity are under imminent threat whilst population and 'the economy' continue to expand unless the 'standard of living' was drastically reduced, and there are no signs that that would be politically acceptable. The ACF was for some time reluctant to tackle population and immigration questions for fear of being branded 'racist' but, hopefully, are past this phase. It is to be hoped they don't get spooked with the latest refugee paranoia but rather treat the problem in a comprehensive way which could lead to a positive outcome for all concerned.

Whilst maintenance of biodiversity is the prime target, it is important to tackle the economic questions at the same time, as I doubt the biodiversity arguments will be heard amidst the babble of chatter about the need for economic growth and a 'healthy' economy. We urgently need some sound economic research on maintaining stability with a 'no net growth economy'. I managed in 1981 to persuade the IUCN to accept a motion on the need to sponsor such research but it seems to have been ignored since. There seems to be lamentably little economic research on sustainability being done or is it that it is just being ignored.

In defence of the Conservation Movement in relation to its apparent concentration on forests, it was virtually forced into this by the government agenda in relation to forest agreements, but I agree that too much emphasis has been placed on wilderness. This is exemplified in the case of Nadgee which already had strong protection as a Nature Reserve but essentially for ideological reasons was declared Wilderness. Its potential for research has been compromised.

The government has made capital, as Recher says, in its declaration of wildernesses while dragging the chain on sustainability and biodiversity. These are attracting some support at the Local Government level though still more in the breach than the performance. The development of policy within the NPWS does lean increasingly towards accommodating tourism within our reserves, including many Nature Reserves, that one becomes increasingly apprehensive as to where the line is drawn.

Recher is rather harsh in his criticism of the movement in relation to land clearing, for much effort has been made by them in this field. If it is to some extent misdirected as suggested then let us examine and take on board his proposals. The same goes for his criticism of the thrust for parks and reserves. Whilst many come into conservation via bushwalking I believe that nature conservation underlies the majority of their proposals rather than recreation. The movement is largely comprised of amateurs in the field of biological science, albeit generally well informed ones. Input from the professionals is, by and large, welcomed. A more direct channel of communication is called for rather than sniping at each other which tends to undercut the efforts of both. It is pleasing to see that this address was given to the NCC at the heart of the action in NSW.

HC(John) Dorman
Bundanoon

8. Response by James Woodford

Sydney Morning Herald

Many people have used Professor Lomborg's book, the Skeptical Environmentalist, as a means of condemning the conservation movement. As I mention in my piece I felt that Lomborg was probably as guilty as those he criticises of occasionally guilding the lily to fit his thesis. Until someone analyses Lomborg's 3,000 footnotes then the average reader will probably have to take the word of whichever side of the debate has the most convincing rhetoric. The piece of mine that Recher refers to started as a review of the Lomborg book but actually turned into a feature about some changes that need to be made to the way we manage the environment as seen from the perspective from my humble seat as an environment writer and natural history author. The nation's biggest environmental threat as I see it is not mining or logging but AGRICULTURE!!!!!! The number one feral pest is the BLOODY SHEEP. As I said in my piece, green groups are embracing the need to campaign for landscape scale change. Conservation groups that are not actively opposed to current agricultural practices are, in my opinion, wasting their time. I have been criticised for giving Lomborg any oxygen but nobody should be afraid of being questioned. The green movement is experiencing change, not the least of which is a sharpening of environmental awareness among the general public. A lot is at stake in making sure that environmental concern is harnessed in the direction where it will have the most benefit.

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9. Response to Recher's article on "Challenges for Nature Conservation"

Pat Hutchings, President of RZS

I concur in general with Harry Recher's article and hope that these series of comments from a wide range of people representing a variety of disciplines and organisations can provide some impetus to change the way our politicians at all levels of government view the environment, because without the political will nothing will change.

I would like to widen the debate. Recher suggests that the public has been heavily focussed on forests, the Great Barrier Reef (GBR) also elicits similar feelings from the public. They believed that it is a national treasure and in need of protection, which it certainly does, but there are many other coral reef areas in Australia, which also need better protection. Yet, until recently the Great Barrier Reef Marine Park Authority (GBRMPA), a federal agency which manages the GBR in conjunction with Queensland National Parks and Wildlife, played no role in the decisions made by various Queensland Government Departments which control such things as rate of loss of coastal wetlands, coastal development, rates of land run off and changes to river flows, all of which subsequently impact on the GBR. The Authority has now recognised the importance of these downstream impacts and the need to control these impacts especially on inshore reefs. However, it is not yet clear how much additional funding will be given and how the Authority, which reports to Environment Australia, will be able to interact with the various Queensland Government Departments to try and reduce these impacts. Unless these impacts are ameliorated then the long-term future of the inshore reefs of the GBR is threatened, although some would suggest that damage has already occurred.

While the focus has been on the GBR, these downstream effects also impact on all the other coral reefal systems in Australia and also need to be addressed, especially as development begins to occur in remote areas of NW Australia. Marine ecosystems have tended to be ignored- out of sight out of mind, but many of the problems which Recher alludes to occur in the marine environment, primarily loss of habitat and resulting loss of biodiversity. Human impact on the marine environment is also considerable (Ponder *et al.*, in prep.)

To have areas of the marine environment highly protected and surrounded by areas of general use zones where trawling occurs and which has been likened to clear felling, is similar to establishing terrestrial reserves surrounded by dense urban development. As has been tragically shown on our television screens over Christmas, the Royal National Park in Sydney has again been severely burnt, after not fully recovering from the 1994 fires. Some back burning had to occur in the Park in order to try and protect property which in reality should not have been built in such close proximity to the Park and especially on adjoining ridges. But with Sydney's ever increasing urban sprawl building land is at a premium. With the

Park largely burnt and surrounded by urban development how will this Park recover? Fortunately for the plants some seeds will have survived in the soil as part of the seed bank but the picture is much grimmer for the animals. In reality the Park will not recover and there will be a loss of biodiversity, especially amongst the larger animals. Hopefully some of the smaller invertebrates may have survived in unburnt patches, but we will never know as much of this fauna is still to be documented. This example only confirms Recher's point that to rely on reserves for the conservation of biodiversity is inadequate. In decades gone by fires in the Park would have had less devastating impacts as recolonisation would have occurred from nearby bushland, alas this is now largely covered by urban development.

While the concept of wilderness areas has not been applied to the marine environment, we have had the recent declaration of marine parks in the Great Australian Bight and the Tasmanian Sea Mounts Marine Reserve off southern Tasmania that really only protect components of the marine fauna, in the former, whales, and in the latter the fauna associated with the sea mounts. But in both cases complete protection to all the fauna is not given with some commercial fishing being allowed in both parks. Being cynical one could think that saving whales is of public concern and as we have no commercial whaling industry no votes will be lost, but the commercial fishers do have votes so they must be allowed to continue to fish.

As a member of the Scientific Committee established under the NSW *Threatened Species Conservation Act* (TSC) I watch with disquiet the increasing number of species, both animals and plants, which are being nominated for endangered or vulnerable status. How effective is such a listing, certainly in some cases it can make a difference, as hopefully the recent listing as vulnerable the Grey-headed Flying-fox (an RZS publication on its management is in prep.) and the development of recovery plans for the Copper Butterfly out west where NPWS has certainly made the community become involved in this project (Nally 2001). However, for many species little or no action will occur, simply because of the financial constraints of developing and implementing the recovery plans. But really these listings just highlight our impact on the environment and the real need to conserve species and prevent them from ever getting to the stage of having to be nominated. Of even greater concern, as an invertebrate biologist, is that many species or their populations will go extinct without us ever knowing about them, and therefore it is difficult for us to know the role that they play in the ecosystem.

I strongly endorse the view of Recher's that clearing and soil salinity are the two most important challenges facing Australia and the downstream impacts that clearing causes on the marine environment. Yet even though some government departments make the right noise about these issues and some legislation has been enacted, too many loopholes exist. Recent figures suggest that the rate of land clearing has not decreased, it has increased. Similarly there is still only lip service being paid to the conservation of water and it is mainly directed towards human need not for the other organisms. Many people do not yet regard water as a precious commodity which must be paid for and conserved. Mangrove and salt marsh communities require a regular input of freshwater in order to properly function, reduced levels of input will degrade these important habitats and this will have flow-on effects on estuarine ecosystems as a whole.

To conclude on a more positive note, I believe that we have enough information on how terrestrial and some marine ecosystems work that we should be able to conserve them, but what is missing is the lack of political will to make the necessary decisions. We still have rampant territoriality of Government Departments protecting their turf, rather than Departments working together in order to conserve our biodiversity. What do we as scientists need to do? Is it just a question of education, or do we as scientists have to become more focussed and political as Recher is suggesting. I think it is the latter, we need to be heard in all Departments and not to be intimidated by bureaucrats who will have changed Department by the time the decisions are made. Finally we need to have some informed debate within the community re the levels of population which Australia can sustain, regardless of their ethnic origins. This debate must also question the concept that growth is always beneficial, but for whom? Certainly not for our biodiversity.

Nally, S. "Another Copper Cuppa?" Paper presented at the 5th Invertebrate Biodiversity and Conservation Conference- held in Adelaide December 2001.

10. Response to Recher's Challenge

Roger S. Lembit,
President,
National Parks Association of NSW,
Sydney South, NSW, 2000.

Harry Recher is correct in aspects of his provocation of the nature conservation movement. The movement needs to periodically review its priorities and re-assess its approach to informing the general public and politicians on the "real" issues.

Recher reports on criticism of conservation groups for spending too much time saving forests. To some extent the highlighting of the forests issue reflects the demands of conservation group membership. A recent survey of NPA members in NSW showed that the majority of respondents were interested in forest conservation. Member appeals with a forest theme regularly result in higher levels of donations than those for issues such as rangeland conservation.

Recher's comments on wilderness represent a series of cheap shots. Wilderness areas are generally large, with boundaries as far as practicable based on catchment boundaries, one of the reserve design standards which Recher seeks.

Recher is incorrect in assuming that biodiversity conservation and land clearing are not priorities for the movement. These are not new directions for the movement. The Australian Conservation Foundation has for many years employed Project Officers dealing with the brown issues of agricultural land degradation and catchment sustainability. The NSW NPA has been working on protection of biodiversity in western NSW for over a decade. Its vision for the protected area system is a series of linked National Parks, Nature Reserves and well-managed private land extending the length of the Great Dividing Range with links to the coast and to the west. This is landscape scale conservation, not just protection of the rocky, low fertility land in isolated patches which represents much of the current National Parks system.

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11. Politics, Science and Ethics

Allan Fox

Dr. Recher's paper is timely as it reminds us that nature conservation is much more than the dedication of record numbers of reserves. In fact, regardless of how many headlines or 'greenish' votes the government might win by building the reserve system with appropriate management, if human population grows unchecked and if the prevailing growth in consumption of resources remains the core of our socio-economic system, nature as we know it is doomed, just as we as a species shall be. Harry correctly emphasizes the difference between nature conservation and the conservation of naturalness. While the words are subtly different, there is a world of difference in meaning, but it is a difference not perceived by either the politician or the body politic. I am cynical enough to recognize that if the population doesn't see the difference then the politician is unlikely to lead the way particularly if the vocal nature conservation groups with political power are happy to be satisfied with the protection of some old growth forest, more dedicated 'wilderness' and protection from the side-effects of mining and uranium. Issues, by the way, which were driven by the conservation movement, not the government. These are important issues but they are masking other problems of greater overall significance such as salination, runaway destructive infection of living communities by biologic (e.g. cane toads) and chemical pollutants (herbicides and other biocides), atmospheric modification and probably by the results of miscalculated genetic engineering.

Human progress in a democracy requires a linking of science i.e. the search for knowledge, ethics and the population, and through the population to government. Ultimately, what the government does is the will of the mass of the people. That linking mechanism, regardless of the Dr. Kemps of this world, is education and is the sum of human experience. This comes in many forms and reaches us through our senses, in its most organised form as formal and directed education structured to achieve predicted outcomes. But heedless of how high-minded the planned outcome, it must be effectively communicated. Judging from the environmental problems surrounding us, the communication of our accumulated experience and knowledge has been lamentable.

There are countless messages bombarding us throughout the day via home, schools, the visual and audio media including the electronic Web, human contact and from the environment itself. Most of this communication is chaotic, much of it from the variety of media operated by both private enterprise and government and being 'pushed' by many political and economic motivations, apart from being confusing, is directing incorrect messages as a planned outcome. A primary goal of an early liberating education should be to provide means for the individual to cull and to evaluate information. This is only poorly achieved. So, part of the resolution of this chaos of messages bombarding us concerning the maintenance of a healthy biota of which we are a part, falls as a responsibility on quite a variety of involved and responsible government and other public agencies. Three stand out, the Department of Agriculture, the Environment Protection Agency (EPA), the National Parks and Wildlife Service (NP&WS). They have quite powerful education arms. Regardless of what political party is in power they will have a major educational problem, that of being independent of political pressure in both the selection of educational topic or issue as well as of the presentation of which and how much information.

A feature of the educational programs of the last two has been to concentrate on single subject information leaflets about things like waste disposal. These are very safe politically but do not provide an integrated view of the living systems and the impact of human activities such as the impact of the cotton industry on the Murray-Darling system or say, irrigation industry on soils in areas of hot, dry summers. Such issues-oriented topics provide much more than simple single topic materials. They are, of course politically sensitive but build in the participant reader an awareness of systems and the intricate nature of relationships. The earlier wildlife service with its miniscule budget presented a quarterly Journal of 64 pages which it distributed to 40,000+ families throughout the State and which remained free of political control to run special papers on topics like “Towards a Wiser Pest Control Philosophy” and “Wetland Dilemma” and was frequently severely critical of government policy. It was environmentally newsy and introduced its readers to new literature. In many ways it built a trusted political climate which helped establish the NP&WS. This Service misunderstood the need for such a journal written and illustrated to educate the layman, and instead produced an expensive pseudo-scientific journal which rapidly died, not satisfying scientist or the informed layman. The NP&WS with its vast resources by comparison, can be severely criticized as it still has not entered this field thirty years later! Only by building an informed involved public will governments begin to face and reduce the real environmental problems that are already with us. Certainly the earlier *Fauna Protection Act* was an incredibly advanced Act for its time. Almost unbelievably in today’s political climate, that Act actually instructed the wildlife service to form public organizations to pressure government on wildlife issues. Over fifty such ‘societies’ were formed and under the convenorship of the Fauna Panel, the Nature Conservation Council of NSW was formed. Government Authorities can make an educational difference!

An issue raised by Dr. Recher which is of special interest to both of us was the declaration of Nadgee Nature Reserve as a Wilderness Area, one of 32 listed in 2000-2001 Annual Report of NP&WS. Here, science is to play second fiddle to exclusive recreational use by very few people. Here is an area which has a long human history, commencing thousands of years ago, to then be utilized as an agistment sheep run in the 1860s, settled as a cattle run and vegetable farm, parts ploughed for wheat farming, prospected and part mined for gold, a wartime military establishment then became the classic Nature Reserve where numerous scientific programs ran and were running of national significance. Forty three years later it was suitable to be declared a Wilderness Area thereby shutting off its resources for many scientific enquiries. This move is not “economic”, because its scientific uses are impaired, while before declaration it was obviously suitable for both science and wilderness use as well as for educational purposes which have now been completely cancelled out. ‘Wilderness’, in the end, is really a state of mind, not a state of nature.

The real value of wild systems is in the information that they contain. ‘Information’ is equated with biodiversity and the dynamic links between its parts. Thus the wild system is analogous with a national library; the State Forest under forestry management, with a regional library; a sheep station with a local library; and dare I say it, a clapped-out derelict and deserted sheep station left to rehabilitation by natural processes, a very special wing of the national library where we can study natural processes at work. But for this latter situation to be accepted, we need more Aldo Leopolds and that harks back to environmental education again! Unfortunately, National Park Services, (I leave ‘Wildlife’ out because on its organization chart, NP&WS has cut ‘wildlife’ out of its chart) tend to be landscape architects rather than resource managers.

When it comes to distinguishing between nature reserves and wilderness areas, I can do no better than to quote the 'father' of the nature reserve system, Allen Strom, Chief Guardian of Fauna, writing in a letter (21/3/1967) to Dr. Don McMichael who had been asked by Minister Tom Lewis to clear up the question before final drafting of the National Parks and Wildlife Bill.

"Whilst I believe that wilderness areas and nature reserves are very nearly definable as the same thing, I can see these problems -

a. In a nature reserve, we need to retain the right to "monkey" with the environments and life forms in their habitats, for scientific enquiry. This could be aesthetically unacceptable to the "wilderness experience".

b. Whilst hardy recreation is acceptable in a nature reserve, it is a bonus, not a right. There are those who contend that hardy recreation is the sole use of wilderness areas, the preservation of the environment being for the production of "atmosphere". One must admit that in a wilderness area, hardy recreation is a right.

c. The purposes of scientific reference areas would suffer very badly if we accept multiple-use too literally for "wilderness areas" (i.e. both hardy recreation and scientific reference). Any decent sized areas (e.g. Nadgee, Barren Grounds etc.) will be filched to become national parks because they may be "zoned" as wilderness areas. This seems to me to threaten the security of scientific reference areas and presage the possibility of only small "islands" of environment being left for nature reserves. One should note that wilderness areas as mentioned in Section 29(7) of the Bill are not very secure and are only "zoned" parts of Parks.

The picture might clear then, to this -

Nature Reserves: Scientific reference is of paramount importance, hardy recreation a bonus.

Wilderness Areas: Hardy recreation is of paramount importance, scientific reference a bonus except where it may be shown that no similar examples of ecosystems exist in Nature Reserves (e.g. Kosciusko Alpine Environments)."

Strom went on to provide a draft of wording for the Bill.

The decision to declare Nadgee a Wilderness Area is the kind of decision which drew the following comment from the US Parks Service latest historian: " The Park Service may have thought of itself as being ecologically aware, but it remains largely uninformed about its biological resources and oblivious to the ecological consequences of park development and use. Its reluctance, dating from the 1930s, to pursue recommendations of the wildlife biologists for scientifically based preservation of natural resources had no doubt allowed a vast multitude of both anticipated and unforeseen changes to the parks' natural conditions - changes that might have been avoided had the Service understood the parks better." This last point was brought home to me on reading in Saturday's Herald that the Director General of the NSW National Parks and Wildlife Service was surprised that there were so many Wildlife Refuges under his management. The NSW Service has within its armoury of parks and reserves all of the kinds of reserves and management options to satisfactorily answer Dr. Recher's final problems concerning mobile wildlife being maintained in immobile reserves, but only if the Service is aware of its own potential and gets out and does the job. But they will require the science!

Editor's Note: Allan Fox is currently completing the draft of a biography of Allen Strom which not only tells the story of Strom's amazing life for the environment but it also traces much of the history of nature conservation in NSW during the twentieth century.

(Fox received the OAM in 2001 for services to the environment and conservation through education and management.)

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12. Musing on Harry's Challenges by Nancy Pallin

I agree with Harry Recher that conservation of biological diversity needs to become a top priority of the Australian people but it is not only the responsibility of the environment movement to accomplish this. Developing an understanding of ecosystems and how they function in humans is a huge challenge - not only for environmentalists. Academics and government bodies whose charters now include responsibility for natural areas, natural resources and environmentally sustainable development clauses must include conservation of biological diversity as a basic premise in research, teaching, policy development and planning.

Much is happening at the grass roots level across the country. Volunteers in Landcare, Bushcare and Streetcare groups are working to restore native habitat at the local scale. Not much of this reaches the news media and for the volunteer leaders getting press coverage is another chore adding to their already sizeable burden.

An example of a local environment group, which has used bats in order to illustrate to the community how plants and animals can be interlinked over large areas, is the Ku-ring-gai Bat Conservation Society Inc. After 15 years this small group of unpaid members have achieved some acceptance of bats in the local area. It has convinced the Council of several Local Government Areas in northern Sydney to accept these native animals and efforts are being made to retain and replant the eucalypts which are important in their diet. Hand-reared Grey-headed Flying-foxes were presented live at public events to dispel myths. Meeting a bat or other native animal is effective in changing public attitudes. An appreciation of individual species is a first step toward leading people to the more complex understanding of how ecosystems function. For this, the argument that these bats are pollinators and seed dispersers has been used. With photographs and cartoon - type posters the message is slowly being absorbed.

At the same time, the KBCS had undertaken a habitat restoration project in Ku-ring-gai Flying-fox Reserve which has involved volunteer bush regenerators working each week, a series of grants from 1987 to 2002 (currently Natural Heritage Trust grant) employing contract bush regenerators and Ku-ring-gai Council makes an annual contribution to maintain the previously restored areas (Pallin 2000).

In 1985 the Grey-headed Flying-fox was an unprotected species and there were no limits on disturbance of their camps or shooting them as a pest. Now it is a threatened species in NSW and nationally. The local groups make significant contributions to such changes.

In comparison with the objectives Harry Recher has highlighted, these efforts seem too slow, too local and depend on a huge investment of personal resources by a small group of committed people. Conversely, other groups are making similar efforts on behalf of other species, mostly birds and mammals, but recently some reptiles and invertebrates too, and for other bits of bush. Many of these people interact with Local and State Government and some of these are pushing for positive policy changes because of the need to conserve biological diversity.

I wonder, if the general public had a clearer understanding of what they must pay for repairing damage to the environment, whether they would take more notice and learn faster?

Pallin, N. (2000). Ku-ring-gai Flying-fox reserve: habitat restoration project, 15 years on. *Ecological Management and Restoration* **1**, 10-20.

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13. Shaking the foundations: a response to Recher's challenge to the conservation movement

An iconoclastic broadside

When Harry F. Recher presented his speech at the NCC (Nature Conservation Council) conference on 28 October 2001 many in the audience were outraged by his trenchant criticism of the conservation movement. I was not at all surprised by his speech and by the response. He has presented his excoriating views before and one might presume that a subsequent invitation to speak would elicit a similarly iconoclastic broadside. On 18-19 July 1997, when he stepped up to the podium to speak at the NCC and NPA (National Parks Association) joint conference, he placed a clear, blank, plastic sheet on the overhead projector with great ceremony. Gravely staring at the empty white space on the wall, he intoned severely that this was the recent record of achievement of the conservation movement. The audience reacted with stony silence. Although the high drama of his opening line is not apparent in the published version of his paper (Recher 1998), the controversial opinion he expressed is to be found in the second paragraph: "Not only are Australian governments committed to a myopic paradigm of unrelenting growth and development, but Australia's peak environmental agencies are preoccupied with preserving things that have little to do with biodiversity. Most of Australia's environmental groups (and professional scientific organisations) are preoccupied with protecting Crown Land, forests, wilderness and endangered species of vertebrates…".

My memory of Recher's 1997 presentation is particularly vivid because I was the next speaker. As a known associate of Recher, my walk to the lectern was marked by silence and possibly some apprehension. What luck that I had foreseen the possibility of Harry Recher's muscle-flexing. My opening slide was a photo I had taken of Harry M. Recher (Harry F. Recher's father) in Nadgee Nature Reserve in 1970, the first of Harry's 33 years of continuous research in this magnificent reserve. In 1970, Harry M. was the same age as Harry F. in 1997 and was of roughly similar appearance. My opening line was: "If you think Harry Recher is fierce, you should have seen his dad!" Much laughter, and a smile from Harry F. in the front row of the audience. Great, I could now develop my thesis on the role of national parks and nature reserves as an invaluable field for scientific research and urge more scientists to become involved in the selection, management and use of parks and reserves (Lunney 1998). Given my thesis, one can imagine my concern when the following resolution was passed at the end of the conference: "that wilderness management at Nadgee Nature Reserve be implemented in a manner consistent with the Wilderness Act and which allows access for scientific research *related to the ecology of the area*" (my italics, p.170 in Prineas 1998). The reason for this concern arose from the italicised phrase which I immediately perceived could limit the research conducted in the area to that which managers would consider as being "related to the ecology of the area". A narrow reading of the phrase could, in fact, exclude much of the research that Recher and others have conducted there over the years.

To give an example, in 1969 Harry Recher began research in Nadgee on the ecology of small mammals in the wild, a major intellectual field in the USA at the time but a subject then in its infancy in Australia. Such open-ended research may now fall outside the criterion of being "related to the ecology of the area" since it could have been conducted elsewhere even though its findings would certainly be as applicable to Nadgee as to any place where small mammals exist. It was only when a fierce crown fire swept through the Nadgee study plot in December 1972 that the research project became specific to Nadgee and would have, on a narrow reading, satisfied the above criterion of being "related to the ecology of the area".

Similarly, the fine work on dingo ecology initiated in Nadgee in the late 1960s by Alan Newsome of the CSIRO would not have fitted the criterion until the fire of 1972 centred the research specifically in Nadgee. Thus, I contend, two of the longest-running field research projects in Australia commenced their life outside the 1997 NCC/NPA criterion for acceptable research in Nadgee Nature Reserve in its new designation as a wilderness.

My long-term concern is that too few scientists support the cause for the dedication and management of reserves, or use them as research areas, or encourage others to do so. Restrictions on research in parks and reserves, especially those recognised as wilderness under the *Wilderness Act 1987*, may well discourage research in new fields such as forest invertebrates and other disciplines such as taxonomy, palaeontology and parasitology that do not fit the criterion of being "related to the ecology of the area". Some sectors in the conservation movement may not realise that the wish to declare existing parks and reserves as wilderness and/or limit research to the 1997 criterion applied to Nadgee may inhibit many potential researchers from conducting useful research in wilderness areas, and this in turn may lose the support of researchers for the dedication of new reserves.

Turning to another environmental organisation, the Wilderness Society website carries the following resolution in its Code of Management of Wilderness Areas: "*2.4 Research.* a) Research which contributes to wilderness management including research which increases understanding of natural ecosystems and processes, and which is of low environmental impact, will be encouraged. b) Environmental research which cannot be carried out elsewhere and which is of low environmental impact, may be permitted". Similar to the NCC/NPA resolution, this resolution may be more sympathetic to the need for research into natural processes, but it does restrict research to "natural ecosystems and ecological processes". It also carries the stipulation to allow only that research "which cannot be carried out elsewhere". Further, the requirement for research to have "low environmental impact" would appear to preclude conspicuous animals traps, or small research huts, access tracks, or any experimental manipulations, such as control burns or even the placement of permanent plot markers, without which long-term ecological research is practically impossible. Moreover, as access to wilderness is limited (particularly the exclusion of vehicles, unlike national parks and nature reserves) it becomes impossible for researchers to carry in (by foot) the equipment required for their research, equipment such as traps, tents, fridges, specimen containers, field books, location stakes and food and supplies for an extended research period. Thus, reserves which once served as "living laboratories" are no longer available for the very environmental research and monitoring that are critical to gaining an understanding and appreciation, beyond an aesthetic response, of those same "natural ecosystems and ecological processes". What makes such resolutions really vexing and perplexing is that the NCC, the NPA and the Wilderness Society essentially share Recher's concern for biodiversity conservation and restoration.

My over-arching concern is that the value of research is not being recognised in the conservation agenda of many groups. The lack of formal support leads to barriers being raised against research in parks and reserves and research proposals not being supported for funding anywhere. In fact, there is no explicit call for research among the resolutions of the 2001 NCC conference (see ncc.nsw.org). Neither is it mentioned in the otherwise thorough and far-reaching ACF (Australian Conservation Foundation) document *Natural Advantage. A Blueprint for a Sustainable Australia* (*Habitat* Vol. 28, October 2000, and the ACF website acfonline). Without explicit support, environmental research will not be adequately resourced. It requires funding, and time, to achieve results that can be applied on the ground, and without continuing research, the means of conserving biodiversity is doomed, and we shall be limited to that knowledge base and set of ideas we now have. These are insufficient for the task, which is so formidable that all related disciplines such as taxonomy, museum collections, palaeontology, veterinary pathology, physiology and the botanical sciences need to contribute to the effort and be supported and encouraged. The NSW Biodiversity Strategy (NPWS 1999) recognises the role of research and gives a high priority to long-term monitoring, but it is only in reserved areas that long-term research can be conducted. The wilderness management regime sought by the NCC/NPA resolution of 1997 precludes much research that is recognised as high priority by the biodiversity strategy. The NCC/NPA resolution really says that wilderness is so important that research should be curtailed, in this case limited to research deemed by a non-researcher (manager) to be of specific relevance to the wilderness area in question. Such a stance is hardly in keeping with the breadth of perspective contained in the title of the 1997 conference: *National parks: new vision for a new century* (Prineas 1998).

As a long-term member of the NPA, ACF and the RZS (Royal Zoological Society of NSW), as well as professional scientific societies such as the ESA (Ecological Society of Australia) and the Australian Mammal Society, and as a NPWS (National Parks and Wildlife Service of NSW) employee since 1970, I have witnessed a transformation in conservation thinking. Some of the outcomes have been spectacular, such as the ten-fold increase in the area of parks and reserves in NSW, the inclusion in 1974 of reptiles as protected fauna, and the dramatic changes following the *Endangered Fauna (Interim Protection) Act 1991* (with the inclusion of frogs as protected fauna, thus making them eligible for endangered status), and its successor, the *Threatened Species Conservation Act 1995* (with the much maligned Grey-headed Flying-fox *Pteropus poliocephalus* moving into the schedule of vulnerable species in 2001). This recent listing shows that conservation values have changed sufficiently to allow this species to be listed, an action which would have been unlikely, even in the recent past. In the 1970s a ministry of the environment was created, the powerful *Environmental Protection and Planning Act 1979* was promulgated, and there was a vastly increased awareness of the value of conservation in society at large. The first NSW State of the Environment (SoE) Report (EPA 1997) was another bold statement, but it carried a grim message, as does the current NSW SoE Report (EPA 2000). It seems that the battle to conserve biodiversity is being lost despite the brilliant string of conservation successes, which have certainly been sensational by the standards of the 1960s, when the first *National Parks and Wildlife Act 1967* became law, and the early 1970s, when the beaches were being sandmined and littoral rainforests scraped off the dunes.

The tasks ahead will require an increase in conservation effort that penetrates deep into the structure of society itself. As Clive Hamilton (2001) identified in his disturbing book on climate change, the structure of industry and transport will change because of the need to reduce our use of traditional sources of energy. While the climate issue focuses on technology, the major overlap with biodiversity conservation lies in the need to increase our rate of change of policy development and to sustain our research effort at the level of both problem identification and resolution. Here, such environmental groups as the NCC and the ACF have a vital role to play. In my view, Recher is trying to jolt everyone into the reality of the environmental situation. The NCC will continue to achieve much with or without Recher, but what Recher is implying is that the current goal setting is too low, and sometimes misdirected. The group most sensitive to that criticism is a volunteer conservation body, and not the bureaucracy or politicians, targets he often chooses. What we need is not for Professor Recher to be quiet, but for more university professors, and other staff, to speak up. Recher is odd, not because of what he says so much as the rarity of academics, especially senior academics, speaking publicly in such a critical way about the future.

Recher is either a fool, and has alienated associates, or is a concerned colleague applying shock treatment to alert us to society's failure to conserve biodiversity. The evidence for the latter view is by far the stronger. In May 2000, the RZS ran a forum entitled *A Zoological Revolution. Using native fauna to assist in its own survival* (Lunney and Dickman 2002). Recher, as the final speaker, took issue with the revolutionary proposals put forward by other speakers and commented that they were neither revolutionary nor adequate to conserve biodiversity. Thus Recher's stance at the RZS forum in 2000 was similar to the one he took at the 2001 NCC conference. Was I dismayed when Recher stood up at the end of a forum I co-organised and heard him being so critical? Not at all, even though criticism is the hardest thing to take, especially when you have worked hard and your successes are on display. However, critical peer review is an essential tool of scientific advance, the lifeblood of research for those who are prepared to defend their position, lift the clarity of their presentation and improve the quality of their work. Harry Recher's only misjudgment may have been to apply that critical principle to those not used to it, but that would not apply to many in the tough business of conservation politics.

An alternative emphasis

Opinion pieces need responses, especially if they are critical of others and their priorities, as is Harry Recher's piece. I am delighted that so many people responded to the offer by the editorial committee to reply to Recher, including my colleagues from NPWS in defence of their management of Nadgee. Recher appears to be deliberately provocative in arguing that "There are campaigns driven by the environmental movement [such as opposition to the logging of native forests and to uranium mining at Kakadu] which not only achieve little for nature conservation, but have a negative impact on the conservation of Australia's biota". Furthermore, Recher's highest priority is population reduction in a continent which he believes has already reached its carrying capacity. Although long held by Recher, these radical views are not shared by everyone (although the NCC policy statement on "Resource use and population policy" is consistent with Recher's views) and need to be continually tested in open forums.

Recher's aim is to shake the foundations. This is always exciting if it challenges the establishment, interrogates entrenched ideas and produces new dreams. I do not disagree with Recher's views, indeed I support them, but my emphasis differs from that of Recher. My response is to highlight matters that in my view are missing from the conservation agenda. The first is that not nearly enough emphasis is given to the value of research in the conservation vision. I have already explained this view in relation to the management of the Nadgee wilderness for research as seen through the NCC/NPA resolution. It is this romantic position, rather than compliance with the Act by NPWS staff, that generates the fundamental clash of values. However, it was the public servants who ventured to comment on Recher's points in relation to Nadgee and on access for research, while the advocates of wilderness were silent on this major example.

The second matter is that we do not put enough effort into formal communication, particularly publication. The "we" here includes my research colleagues, and although their survival is contingent on publishing, many are still tardy in publicising their findings, and I suspect that their publication rate would decline further if promotion or survival did not depend upon it. The "we" here also includes those in the conservation movement and fellow public servants. Although so much good work and clear thinking is manifest in the day-to-day output of both groups, the tragedy is that it does not often see the light of day and be of value to others. The speeches by Peter Garrett on the ACF website are uplifting, and the promotion of new ideas is great because of their breadth and obviously thoughtful input. The web may be the great communication tool of the future, but it is only a means of publishing in a brilliant new format, and the essence of communication remains the preparedness to write and to be read critically.

On the last point, identified authorship is essential in my view, yet it is rarely seen on web pages. Anonymous writing absolves authors of responsibility, and diminishes the willingness of others to reply. Imagine if the *Australian Zoologist* had run Recher's piece as an anonymous contribution. Recher should be accountable: if the work is good, he should collect the credit, and if it is poor, then he should cop the criticism.

Publishing is a great tool for bridging the science/conservation divide, for example, in relation to matters of fauna conservation, such as whether invertebrates should move towards centre stage (see Ponder and Lunney 1999 for a long series of papers espousing this point), or whether eating our native fauna (instead of letting the dominant agricultural paradigms continue to prevail) (Archer 2002) has sufficient advantages to overcome the current conservation inertia and concerns. Publication also assists in the public testing of ideas before they become policy or law, and it enables others to understand the link between seemingly unrelated matters, such as road safety and biodiversity conservation. Forums can assemble great speakers, but it is publications that have the real reach, are a permanent record and make wider contact.

One of the strengths of the journal *Pacific Conservation Biology* (edited by Harry Recher), among other journals[1], is the opportunity it offers to publish alternative viewpoints. If any one organization had a stranglehold on scientific/conservation outlets, most scientists and conservationists would react in horror to the possible censorship of new ideas, but this, fortunately, is not the case. In fact, independent journals flourish where government scientific and conservation journals do not. The same reasoning applies to any group, be it the NCC, ACF or the RZS as the only source of alternate viewpoints. Similarly, if Harry Recher's was the only voice it would narrow our options, but if he were silenced because we did not like his views, it would be a disaster for conservation, science and democracy. The answer is to hear all voices as a matter of principle, run a debate and allow others to participate, e.g. by writing, joining societies or putting your volunteer or professional time into causes you support. The debate in this issue of the *Australian Zoologist* is being published in response to Harry Recher's NCC address of 28 October 2001, and is just one way of maintaining the independence of science and conservation and ensuring their openness to the best ideas.

Opinion pieces

The value of opinion pieces, such as Recher's NCC speech, is much underrated, but many fellow scientists know that criticism can rebound in unexpected ways. For scientists on salaries, it can be a major threat, so self-censorship sets in. This is a terrible waste of talent and education in a democratic society where civility in criticism is really all that is required, not silence or anger, nor leaking of documents as a means of getting your criticisms into the open. Fortunately, there are other mechanisms for expressing viewpoints, such as the journals listed in footnote 1, the forums such as those held by the RZS and the published proceedings that follow, where scientific contributions are aired and refereed to a high standard, but the opinions are left standing, uncut. These avenues allow new ideas to be tested and, if the idea survives, and especially if the author gains positive feedback, the short piece might develop into a book, or even a movement, such as highly specific conservation or scientific groups, or an industry, such as recycling, or kangaroo meat and skins, or bush regeneration.

Although opinion pieces, letters to the editor, forum papers and solicited features all encourage ideas that are not subject to the process of refereeing, an editor may return a piece of writing to an author because its subject is not deemed suitable for the journal or it does not meet minimum editorial standards of clarity, relevance or interest. In fact, this editorial discretion is a primary reason why there needs to be a range of journals with editors who work independently of each other. It is the cornerstone of a democratic society and a vital element in the conservation ideal.

Extending the debate - sacred cows, private land ownership and the conservation of biodiversity

The massive 19th century land clearance in the fertile river valleys of eastern Australia paved the way for a dairy industry that rapidly destroyed or significantly altered almost all the vegetation associations of the flat, well-watered fertile lands and their associated fauna (Lunney and Leary 1988, Lunney and Moon 1997 and Knott *et al.* 1998). My view is that we pay too little attention to the historical changes in both land use and populations of fauna (it is a slow task to research this aspect of the past). Not only is there the matter of very limited baseline data of what was there at the time of European settlement, but also the investigations require a new set of interdisciplinary skills that constitute the nascent discipline of ecological history, also called environmental history, or appears as new specialist interests, such as that of the Australian Forest History Society. As a consequence of the lack of ecological experience and skills to interpret the past, environmental planners and most biologists focus on present concerns without a vision of restoration that is based on a knowledge of the past to provide more options for future rehabilitation.

Many current conservation battles focus on large tracts of existing uncleared land, such as the forests of the coast and ranges of NSW in public ownership, but the conservation value of small native remnants in private ownership are being neglected because they are often hard to locate and then difficult of access. Although a new approach is being tentatively explored through Landcare, Catchment Management Boards, community groups and local government, this neglected geography – the private lands – has so far been beyond the reach of effective conservation management. New conservation tools such as community-based surveys with a focus on fauna (e.g. Lunney *et al.* 2000); the utilisation of native fauna, e.g. kangaroo harvesting instead of sustained sheep production on the rangelands (Archer 2002, Grigg 2002); and ecotourism (Braithwaite 2002) have been proposed to tackle this matter. Approaches which give more authority and value to local knowledge and enterprise appear to complement the effectiveness of strong legislation with thorough enforcement.

Commercial use of native fauna

Some conservation organisations have, surprisingly, been slow to react to the new conservation options proposed and developed by scientists in recent years. For example, the NCC has been reluctant to canvas the option of utilising some native fauna to restore the environment for all native species and, in fact, its most recent publication on the matter opposes it, calling it a nightmare (NCC 1995).

The fact that the NCC has not changed its policy on kangaroo management since 1980 gives weight to Recher's arguments that conservation groups are stuck in the past and lack a scientific basis for their campaigns and policies (see www.nccnsw .org.au). The NCC kangaroo policy states that "Council [NCC] is generally opposed to the killing of kangaroos but acknowledges that there might be a need to cull certain species of macropod in times of overpopulation". However, in a clear policy statement on "Feral and introduced animals and plants", the NCC states that a "sound conservation policy would work towards complete elimination of all these species…" and although this would involve killing animals, "this must not be used as an excuse to discontinue the control of these problem species". Thus it does not seem as though killing animals [albeit humanely] is an issue for the NCC when the interests of the environment are at stake, so it is hard to understand why the organisation is so resistant to the idea of replacing sheep with commercial use of kangaroos on the rangelands when this would be so beneficial to the environment by eliminating the destructive impacts of sheep grazing.

Although the NCC's kangaroo policy states that the "NCC believes kangaroo protein and products may be utilized, provided strict controls are exercised…", the NCC remains, somewhat inconsistently, a strong supporter of an export ban on kangaroo products. The only concession made on the subject since 1980 was the resolution passed at the 1987 conference, following a submission by the RZS, that the "NCC support any initiative for a feasibility study of a marketing drive for kangaroo products, raising prices to an extent that will encourage graziers to reduce their traditional hardfooted stock in favour of free range kangaroos as the best way to counter the spread of deserts in our marginal grazing lands". At the same time, the NCC's policy statement of November 1988 on Ecologically Sustainable Agriculture identifies that the "NCC needs to urgently produce a comprehensive sustainable agriculture policy that will highlight what is missing in the decision-making process of our agricultural industry and government…". It seems that the NCC is hostile to the body of work produced by Gordon Grigg (e.g Grigg 2002) and promoted cogently by Archer (2002), both of whom, among others, have made the link between the utilisation of fauna and the restoration of the native landscape as a step towards ecologically sustainable land use.

Highway upgrades or environmental downgrades

One of my theses is that not enough sacred cows are under scrutiny if we are to achieve a sustainable Australia and conserve its fauna and flora. The dominance of the motor vehicle is a sacred cow whose use in increasing numbers needs to be examined carefully, as does the question of highway upgrades. At the AGM of the

Australian Mammal Society in July 2001, I won a "scruffy" nomination (a much sought after award for the most bizarre item) for suggesting that the authors of a paper on the impact on koalas of the Pacific Highway upgrade through Pine Creek State Forest near Coffs Harbour had uncritically accepted the term "highway upgrade" when the term "environmental downgrade" was what they were actually investigating.

In 1990, former Coroner Kevin Waller called for the "immediate construction of a $2 billion dual carriageway between Newcastle and Brisbane" ("Hell highway's toll of neglect", *Sydney Morning Herald* 22-23 December 2001). The article quoted NSW Minister for Transport Carl Scully as saying, "Only 189 kilometres (27 per cent) is now dual carriageway [and] an extra $1.8 billion is needed to achieve a 100 per cent divided road". Further, "The RTA [NSW Roads and Traffic Authority] argues that the slow progress on the dual carriageway is because the most dangerous sections have been fixed". The article also reported that "The highway's traffic volumes have risen 48 per cent since 1991". The lead editorial in the same edition of the *Sydney Morning Herald* (22-23 December 2001), entitled "The killing road", described the completed sections of the dual highway and the costs involved, and called on politicians to stop their petty haggling and ensure that the road was made safe as quickly as possible.

While I deplore the hideous loss of life and injury, I do not subscribe to the view that the only solution is a dual carriageway.

When we were preparing the Coffs Harbour Koala Plan of Management (Lunney *et al.* 1999), we examined the black spots for koala deaths on the Pacific Highway and talked to the RTA project manager for that area. We put the point that slowing down the traffic was one way to minimize koala deaths, so why not reduce the speed limit on the highway to 90 km/h, as had been done following the 1989 bus accidents near Grafton and Kempsey. He agreed it was a good idea, but said that the public would not stand for it. He might have been right, but it was never put to a plebiscite. Further, we discussed the advantage of building a road over the still-forested lands, or even under the ground, but he replied that it would be twice as dear to go over, and three times as expensive to go under. We can note from the above figures that we are talking about, on average, $3.5 million/km for the dual carriageway on the ground.

I discussed this problem with English ecologist/conservationist Oliver Rackham when he visited Australia in 1996. He said that when road engineers' figures were challenged at a public enquiry in the United Kingdom, the "over" and "under" options were not as expensive as originally claimed by the government engineers. Perhaps the same result would occur in Australia if the engineers were cross-examined. Rackham referred to the cuniculi (tunnels) built in the hills in Italy where the underground option had worked well. This "over" and "under" option is not meant to exclude a discussion of such alternatives as public transport, especially trains, or cheaper air travel, nor a consideration of whether the upgrading itself encourages increased traffic flow, i.e. is the 48 per cent increase in 10 years just natural growth, or does it reflect a quicker, even if not safer, trip and thus the travel option of choice.

During the Christmas/New Year holiday, the media drew attention to the human factor in road deaths. The *Sun-Herald* of 23 December 2001 carried a photo of a line of police with breathalysers in their hands over the caption "Low Blow: Breath testing might be inconvenient but it's better than having to share the road with drunks". Over the page an advertisement by the RTA, entitled "Driving North", advised motorists to take care and to "avoid fatigue; and Stop, Revive, Survive". On 26 December 2001, several letters responding to the lead story of 22 December were published under the heading "Idiots are the real killers on our roads". The point here is that engineering solutions will not solve all the problems associated with road travel, and indeed one could argue that the technological fix should be lower on our immediate priorities if saving lives is of such paramount importance.

Kevin Waller may have been a fine coroner, but he was not a fine ecologist, although coronial skills could be turned to good account for an ecological cause by holding a coronial enquiry into the death of fauna on the road. For many years I have been photographing dead fauna by the roadside and have enough material for a booklet entitled "A motorists' guide to the roadside dead", or perhaps "Wildlife in the fast lane". However, anything that hints at a dead end to the open road, with grim pictures of dead kangaroos and two-dimensional lizards, may be hard to sell to motorists. A coronial enquiry with broader terms of reference would examine the death of the environment under the road surface and the immediate road verges.

In the meantime, why not impose the user pays principle and increase the petrol tax to $2/litre, which can then can pay for the underpasses or overpasses as well as serve as a disincentive to the increasing flow of traffic. Imagine an editorial headline in the *Sydney Morning Herald* that argues for a rise in the petrol tax to help reduce road deaths and increase the protection of the environment.

It seems to me that we are still using yesterday's solutions when dealing with the vexatious matter of road construction, which clears land for roads along the already heavily cleared coastal strip, fragments habitats, erects barriers to animal movement and results in an increase in fauna road deaths. In this context, the battle to ensure the survival of the national parks attains a new urgency. National Parks and Nature Reserves then appear as increasingly sacred as concrete and cars advance, and a wilderness status emerges as a means of conserving the values for which the parks and reserves were originally set aside.

Wilderness: a vision, a land-use, or a reflex

Wilderness is an inspiring title for reserved land, a breath of exhaust-free fresh air, and a quietness that is unobtainable in our car-based culture. For Harry Recher, it is an outmoded concept which has reached its use-by date. Recher says that there is no one Australian organism that requires wilderness for survival; that governments gain a false green reputation by assigning wilderness status to existing reserves without increasing the total area of land reserved; that the declaration of reserves as wilderness can have a negative effect on the designated area by exposing it to increased threats of bushfires and other hazards arising from greater access for visitors, particularly bushwalkers and wilderness campers; and, finally, and perhaps most cruelly for a researcher, that scientists are being hampered in their work because research is inhibited in wilderness areas, as described above. Perhaps Recher's greatest concern is that the current system of reserves, which are unrepresentative of the biota, are generally small, have high boundary to area ratios, and will "progressively lose species" as there is "no scope for biota to disperse". Furthermore, the long-term viability of a fixed reserve system is inadequate for meeting the challenges of global warming, which "will inevitably and insidiously affect the viability of individual reserves for the species originally contained within their boundaries". This is because "the biota will be unable to move between reserves as dictated by climate change". It also reflects the changes to the surrounding land as it becomes more urbanised and as the pressure of ecotourism rises and potentially threatens the values the visitors have come to expect.

In contrast, my concern is that the wilderness ideal is becoming more precious because of the way we are treating the rest of the land. The closer the vastly expensive dual carriageways go to our National Parks and Nature Reserves, the more urgent it is to preserve them from commercial intrusion. At the same time as we reserve land for parks and reserves, we must challenge the hegemony of cars and the use of resources that is transforming Australia into a production landscape with little regard for the long-term survival of our fauna, our native biodiversity and its evolutionary potential. If we do not issue these challenges, but instead retreat from tough debates, such as the battle over the meaning of ecological sustainability, and argue only for a tightening of access requirements to parks and reserves through their rededication as wilderness, we may fail to grasp the essence of the argument for taking a landscape approach to conservation. My vision of Australia is one that aims to conserve our native fauna and the natural landscapes through challenging the norms governing current land uses, encouraging restoration and looking at all decisions through ecological eyes.

Recher as catalyst

Harry Recher has demanded that we think more deeply about the future and look beyond the immediate struggles and conflicts. The role of the conservation groups is vital in this enterprise, and debate is essential. Conservation groups endeavour to look forward with an eye to the green options, as is evident in such publications as the *NPA Journal, Habitat,* the string of NCC publications arising from public forums, and the websites of the various environment groups, so I shall be keeping up all my membership subscriptions. However, there is a pressing need for all groups to seriously consider the seemingly radical options of use, and not get stuck on just protecting and managing particular areas of land or advocating planning as a means of control. There is also a great need to be more supportive of research and a greater preparedness to pursue formal publishing, so keep reading the *Australian Zoologist* and the long list of publications of the RZS, but don't stop there. We also need to continue the debate on sustainable population levels for Australia, challenge the major newspapers in their advocacy of a bigger, government-funded version of our current land-use patterns, and urge leaders such as fellow conservation advocates, researchers and editors to keep developing a vision of the land as they would like to see it in 10 years, 50 years and 100 years time.

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